



national accelerator laboratory

TM-336A
2800

RESEARCH PROPOSALS SUBMITTED TO NAL
SORTED ACCORDING TO PHYSICS TOPICS
AND THE CURRENT STATUS OF THE PROPOSALS

(Through Proposal No. 171)

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National Accelerator Laboratory

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Status

1. Hadron Interactions - Counter Experiments

A. Search and Survey

Rejected

#11A Y. Kim

(Ohio State, Ind. State,
Rose Polytechnic, Kansas,
NAL)

Search for Fast Particles Produced at Large Lab
Angles at NAL.

Includes search for tachyons, quarks.

Approved
12-70

#48 R. Adair

(Yale, BNL, NAL)

A Measurement of the Intensity and Polarization of Muons Produced Directly by the Interactions of Protons with Nuclei.

Approved
12-70

#63 J. Walker

(NAL)

Survey of Particle Production in Proton Collisions
at NAL.

Approved
12-70

#70 L. Lederman

(Columbia, Harvard, NAL)

Study of Lepton Pairs From Proton-Nuclear
Interactions; Search for Intermediate Bosons
and Lee-Wick Structure.

Approved
8-70

#72 L. Leipuner

(BNL, Yale)

Experimental Proposal to NAL Quark Search.
Secondary beam search for particles of
fractional charge.

Approved
8-70

#75 T. Yamanouchi

(NAL)

A Proposal to Search for Fractionally Charged Quarks.

Secondary beam search for particles of fractional charge.

Approved
6-71

#95A B. Cox

(Johns Hopkins, NAL)

Proposal for Examination of Wide Angle Gamma
Rays at NAL.

Approved
2-71

#100 J. Cronin

(Univ. of Chicago,
Princeton)

A Proposal to Study Particle Production at High Transverse Momenta.

Status

1.A. Search and Survey (continued)

Approved
8-26-71

#115 M. L. Stevenson (LBL)

Search for Long Lived Particles ($\tau \gtrsim 0.1$ m sec).
Parasitic beam-dump experiment for long lived
particles ($\tau \gtrsim 0.1$ m sec).

Approved
6-71

#120 D. Cline (Wisconsin, Harvard)

Early π^0 Particle Production Survey with the
Gas Jet Target.
Survey of photon production in gas-jet targets,
using lead glass counters.

Defer
8-71

#123 Y. S. Kim (Ohio State, Indiana
State, Rose Hulman Inst.)

Proposal for a Search for Quark-Matter at NAL.
Quarks will be caught in ferromagnetic
"traps" in beam dumps, detected (off-line)
with Beams magnetic levitometer.

Active

#170 J. E. Pilcher (Harvard, Wisconsin)

Search for Electromagnetic Production of
Fractionally Charged Particles at NAL.

Status

1.B. Total Cross Sections

Inactive
See 104

#10 W. Baker (NAL)

A Proposal to Measure Total Cross Sections for π^{\pm} , K^{\pm} , p , \bar{p} .

Inactive
See 104

#56 R. Cool (Rockefeller, BNL)

Measurement of Total Cross Sections on Hydrogen and Deuterium.

Rejected
3-71

#57 S. Lindenbaum (BNL, Yale, NAL)

Behavior of High Energy Elastic Scattering and Total Cross Sections for π^{\pm} - p , K^{\pm} - p , p - p , and \bar{p} - p .

Approved
8-70

#104 T. Kycia (BNL, Rockefeller, NAL)

Measurement of Total Cross Sections on Hydrogen and Deuterium.

<u>Status</u>	1.C. <u>Elastic Scattering</u>
Approved 2-71	#6 A. Krisch (Michigan, ANL) 200-GeV Proton-Proton Elastic Scattering at High Transverse Momentum.
Approved 8-70, 4-71	#7 D. Meyer (Michigan, ANL, NAL, Purdue) A Proposal to Measure π^+p and $p-p$ Differential Elastic Scattering Cross Sections From 50 to 170 GeV/c.
Rejected 4-71	#16 L. T. Kerth (LBL) P-P Elastic and Inelastic Scattering at Small Momentum Transfer.
Approved 2-71	#36A R. L. Cool (Rockefeller, NAL, Rochester, Dubna, USSR) A Proposal to Study Small Angle $p-p$ Scattering at Very High Energies.
Defer 8-71	#50A J. Orear (Cornell, BNL, Lebedev) Large Angle $\pi^\pm-p$, $K^\pm-p$, and $p^\pm-p$ Elastic Scattering at High Energies.
Approved 8-70	#61 O. Chamberlain (LBL, ANL, Harvard, Northwestern, Wyo., Yale, NAL) A Proposal to Measure Polarization in pp , π^-p , and π^+p Elastic Scattering at 50, 100 and 150 GeV/c.
Approved 8-70	#69 W. Willis (Yale, NAL) Elastic Scattering of the Long-Lived Hadrons. Elastic scattering at small angles, including Coulomb interference region, up to $ t \approx 0.2$ (GeV/c) ² , using high precision spark chambers.
Inactive See 96	#73 R. Anderson (SLAC, Northeastern) Proposal to Measure Two Body Elastic and Quasi-Elastic Scattering at High Energies.
Rejected 8-71	#107A K-W Lai (BNL, Purdue Univ.) Measurements of Elastic and Quasi-Elastic Scatterings of pp and $\bar{p}p$ from ~ 20 to 40 GeV/c.
Active	#165 D. M. Ritson (SLAC, NAL, Northeastern) Proposal to Measure Two-Body and Quasi Two-Body Elastic Scattering at Large t -Values and in the μ -Channel.

Status

1.D. Inelastic Scattering

Approved
3-71

#14 P. Franzini (Columbia, SUNY)

Proposal to Study Inelastic High-Energy Proton-Proton Collisions in the Diffractive Region.

Defer
8-71

#18A G. O'Neill (Princeton, Pavia)

Proposal to Study the Reactions

$pp \rightarrow p(n\pi^+)$

$p(p\pi^0)$

$p(p\pi^+\pi^-)$

at 200 GeV

Approved
8-71
(qualified)

#23A J. Rothberg (Washington)

Inclusive πp and Kp Scattering.

Study of $\pi + p \rightarrow \pi + \text{anything}$; test scaling law.

Inactive
See 111

#55 A. Tollestrup (Cal. Tech)

Proposal to Study $\pi^- p \rightarrow \pi^0 n$ and $\pi^- p \rightarrow \eta n$ at High Energy.

Inactive
See 96

#64 A. L. Read (NAL, ANL, Bari, Brown, CERN, Cornell, MIT)

Hadron Spectra From High Energy Proton-Proton Interactions.

Particle production, elastic and inelastic p-p scattering.

Approved
2-71
(qualified)

#67 B. Maglic (Rutgers, Upsala, Mississippi State)

Search for Baryon Resonances Up to 10 GeV Mass Produced in $p + p \rightarrow p + MM$ with a Resolution of ± 25 MeV.

Inactive
See 110

#68 H. Anderson (Univ. of Chicago)

Multiparticle Production in π -p Collisions at 100 GeV.

Elastic π -p cross-sections, mesonic missing mass search, particle distribution in mesonic cascades, coherent diffraction; uses UC cyclotron magnet.

Inactive
See 111

#84 T. Jenkins (Case Western Reserve Univ.)

Proposal for an Experiment to Study the Reaction $\pi^- p \rightarrow \pi^0 n$ at 30 to 150 GeV at NAL.

Status

1.D. Inelastic Scattering (continued)

Inactive
See 111

#93 M. Wahlig (LBL)

Small-angle Charge Exchange Reactions
 $\pi^+ p \rightarrow \pi^0 + n$ and $\pi^- + p \rightarrow \eta + n$ from 50
to 200 GeV/c.

Approved
12-70

#96 D. Ritson (SLAC, U of Bari, Brown,
CERN, ANL, Cornell, MIT,
NAL, Northeastern)

Focusing Spectrometer Facility.

Active

#99 R. Diebold (ANL, Cornell)

A Study of $\pi^+ p \rightarrow K^+ \Sigma^+$ and $\pi^+ p \rightarrow K^+ Y^{*+}$ Using the
Focusing Spectrometer Facility.

Inactive
See 135

#102 T. Jenkins (Case Western Reserve Univ.)

Proposal for An Experiment to Study the Reaction
 $K^- p \rightarrow \bar{K}^0 n$ at NAL Energies.

Approved
2-71

#111 A. Tollestrup (Cal. Tech, NAL, LBL)

Proposal to Study $\pi^- p \rightarrow \pi^0 n$ and $\pi^- p \rightarrow \eta n$.
Measurement of asymptotic cross sections;
test of Regge Theory.

Inactive
See 135

#113 D. H. Miller (Northwestern Univ.)

Proposal to Study the K^\pm Charge Exchange
Reactions at High Energies.
Measurement of $d\sigma/dt$ for $K^- p \rightarrow \bar{K}^0 n$; $d^2\sigma/dt dp$
for $K^\pm d \rightarrow K^0 nn$, $K^0 pp$.

Defer
11-71

#135 T. Jenkins (Case Western Reserve Univ.,
Northwestern Univ., Univ
of Massachusetts)

Proposal for an Experiment to Study the Reaction
 $K^- p \rightarrow \bar{K}^0 n$ at NAL Energies.

Rejected
11-71

#140 D. Garelick (Northeastern)

Proposal to Study High Mass States of
 π^\pm , K^\pm , p^\pm , with Masses up to 10 GeV.

Defer
8-26-71

#148 K. Ruddick (Univ. of Minnesota)

Coulomb Production of Vector Mesons.

Status

1.E. Multiparticle Inelastic Events

Inactive See 110	#35	D. McLeod	(Univ. of Ill. - Chicago Circle)
		A Proposal to Study Resonance Production in $\pi^-p \rightarrow X^-p$ at 40 to 80 GeV/c.	
Inactive See 110	#43	D. Miller	(Purdue)
		Proposal to Study Single Meson Production in Meson Nucleon Interactions at 50 to 100 GeV/c.	
Approved 11-71	#51	E. von Goeler	(Northeastern, Stanford)
		Mass Spectrum and Decay Modes for Bosons in the 2.0 to 8.6 GeV/c ² Mass Range.	
Defer 8-71	#52B	H. Weisberg	(Penn.)
		A Proposal to Study Particle Production Spectra and Multiplicities in High Energy Hadron-Hadron Collisions, and for a Beam Survey and Quark Search.	
Inactive See 110	#54	J. Pine	(Cal Tech, UCLA, NAL)
		Quasi-Two-Body Reactions at 50-200 GeV. s and t dependence of peripheral processes; search for new meson and baryon resonances; $\pi-\pi$ and $\pi-K$ scattering via pion exchange.	
Defer 8-71	#59A	L. Holloway	(Univ. of Illinois)
		A Proposal to Study the Reaction $\pi^-p \rightarrow \pi^- \pi^+ n$.	
Approved 5-71 (with constraints)	#86A	H. Lubatti	(Univ. of Wash., ORSAY)
		A Proposal to Study Inelastic Diffractive Processes by Observing Coherent Production of Multi-Pion Final States from He Nuclei.	
Rejected 5-71	#106	D. Miller	(Northwestern, ANL, Michigan State)
		Proposal for a Study of Multiparticle Production at NAL Using an Array of Wide-Gap Triggerable Spark Chambers.	
Approved 4-72	#110	J. Pine	(Cal Tech, NAL, SUNY, UCLA, Univ. of Illinois)
		The People's Spectrometer. A proposal for multiparticle physics using a magnetic spectrometer.	

Status

1.E. Multiparticle Inelastic Events (continued)

- Active #118 J. I. Friedman (MIT, Bari, Brown, NAL)
- Hadron Spectra From High Energy Interactions.
Use of NAL focussing spectrometer facility
to study inclusive reactions of type
 $a + b \rightarrow c + \text{anything}$, with incident
 p, π , and K .
- Active #150 J. K. Walker (NAL)
- Study of Two Particle Distributions in the
Secondaries Produced in Proton-Proton
Collisions.
Continuation of #63.
- Active #164-I Z.G.T. Guiragossian (Stanford, Rice,
 Univ. of Houston)
- Multi-Gamma-Ray Final States Using a Negative
Beam on Hydrogen, Cu and Pb Targets.

Status

1.F. Hyperon Interactions

Approved
8-70

#8 L. Pondrom (Wisc., Michigan)

Experiments in a Neutral Hyperon Beam.
Beam survey; search for $\Delta S = 2$ decay;
 σ_{tot} , $d\sigma$ for $\Lambda^0 p$, $\bar{\Lambda}^0 p$ scattering.

Approved
8-70

#97 J. Lach (NAL, Yale)

Elastic Scattering of the Hyperons.

Small_angle scattering of negative hyperons
 Σ^- , Ξ^- , Ω^- ; (also Σ^+ , Ξ^+ and $\bar{\Omega}$ if mass
resolution permits) for $|t| \sim 0.1$ to 0.6
(GeV/c)². Search for leptons $> 10^{-11}$ sec.

Defer
11-71

#149 R. Winston (Chicago, Ohio State, ANL)

A Proposal for Experimental Research on the
Weak Interaction of Hyperons at NAL.

Active

#168 T. J. Delvin (Rutgers, Wisconsin,
Michigan)

Measurement of the Σ^0 Lifetime*.

Status

1.G. Testing and Calibration

Inactive	#13	T. Bowen	(Ariz., NASA, LSU, Max-Planck)
		Ionization Spectrometer Development and Calibration	
Approved 8-70	#32	R. Hofstadter	(Stanford)
		Test and Calibrate a Large NaI (Tl) TANC Detector and to Measure Neutral Hadron Total Cross Sections.	
Approved 8-70	#34	R. Huggett	(LSU, Max-Planck)
		Nuclear-Electromagnetic Cascade Development Study. (Ionization Spectrometer Development)	

Status

1.H. Neutron Experiments

Approved
8-70

#4-I M. Longo (Michigan, ANL)

Neutron-Proton Diffraction Scattering and
Neutron Total Cross Sections up to 200 GeV.

4-I is the measurement of total cross sections.

Approved
8-70

#4-II M. Longo (Michigan, ANL)

Neutron-Proton Diffraction Scattering and
Neutron Total Cross Sections up to 200 GeV.

4-II is the measurement of diffraction scattering.

Approved
8-70

#12 N. Reay (Ohio State, Mich. State,
Carleton)

A Study of Neutron-Proton Charge-Exchange
Scattering in the Momentum Range 50-200 GeV/c.

Approved
3-71
(tentative)

#27A J. Rosen (Rochester, NAL,
Northwestern)

Proposal to Study the Coherent Dissociation
of Neutrons.

Rejected
8-71

#112 M. Kreisler (Michigan, Princeton Univ.)

Neutron Diffraction Dissociation and Coulomb
Dissociation from Various Nuclei.

Status

2. Hadron Interactions - Bubble Chambers

A. Fifteen-Foot Bubble Chamber

- | | | | |
|----------|-----|--|-------------------------------|
| Active | #17 | B. Reynolds | (Ohio Univ.) |
| | | $\bar{p}d$ Interactions from 20 to 60 GeV/c. $\overline{\Delta^{++}}$ p production. | |
| Active | #37 | E. Malamud | (NAL, UCLA) |
| | | Multibody Final States in pp Collisions Up to 500 GeV. | |
| Active | #40 | R. Willmann | (Purdue) |
| | | Diffractive Process in π^-p Interactions at 100 GeV/c. | |
| Active | #41 | V. Barnes | (Purdue) |
| | | Very High Energy Proton Proton Interactions: Exploratory Survey in a Bubble Chamber. | |
| Active | #46 | F. Huson | (NAL) |
| | | A Study of High Energy π^- Proton Interactions with the NAL 14-Ft. Bubble Chamber. | |
| Active | #58 | R. Panvini | (Vanderbilt, BNL, Wisc.) |
| | | Proposal to Study Multiparticle Production with NAL Bubble Chamber.
Energy dependent survey of pp, πp , Kp, $\bar{p}p$ interactions. | |
| Active | #65 | K-W Lai | (BNL, Fla. State, Vanderbilt) |
| | | KP and $\bar{K}P$ Interactions From ~20-60 GeV/c in a Large Liquid Hydrogen Bubble Chamber. | |
| Inactive | #77 | L. Libby | (Univ. of Colorado) |
| | | Proposal to Study High Energy Hyperon Physics at NAL. | |
| Active | #83 | T. Kitagaki | (Tohoku) |
| | | Study of the Antiproton Interactions in the NAL Hydrogen Bubble Chamber at Very High Energies, 40-140 GeV. | |

Status

2.A. Fifteen-Foot Bubble Chamber (continued)

Active

#85 L. Gutay (Purdue)

Proposal for an Exposure of the 15-Foot
Deuterium Filled Bubble Chamber to a Beam
of Separated π^+ Mesons at 40 GeV/c at NAL.

Active

#89 W. Fretter (Univ. of Calif. Berkeley)

Interactions of 150 GeV π^- Mesons in a Large
NAL Bubble Chamber Filled with H₂-Ne.

<u>Status</u>	2.B. <u>NAL/ANL 30" Bubble Chamber</u>
Approved 5-71	#2-I G. A. Smith (Maryland, Mich. State, Iowa State, ANL, Notre Dame, Duke, Toronto, Wisconsin, Purdue) Study of Multiparticle p-p Interactions from 100 GeV/c to 400 GeV/c with a 30-Inch Bubble Chamber--Optical Spark Chamber Hybrid System. Hybrid system with optical spark chambers; 500K pix general survey.
Approved 8-26-71	#37A E. Malamud (NAL, UCLA) Multibody Final States in pp Collisions up to 500 GeV. p-p, 50K pictures.
Withdrawn	#39 W. Walker (Wisconsin, Toronto, Duke) Proposal for the Use of a Rapid Cycling Bubble Chamber at NAL. Diffraction dissociation by 100, 200 GeV/c protons, pions; missing mass, new particle searches.
Withdrawn See 154	#47 I. Pless (MIT) Diffraction Dissociation and Elastic Scattering Processes with Incident Protons and Negative Pions in the 200 GeV/c Region.
Inactive See 138	#62 J. VanderVelde (Michigan) Study of Multiparticle Production in a Small Bubble Chamber. Study of final states.
Inactive	#66 J. VanderVelde (Michigan) Study of Low-Mass Peripheral States in a Small Triggered Bubble Chamber. A second round experiment with a downstream focusing spectrometer using scintillation counters; 200,000 machine pulses with 5 pictures/pulse.
Inactive	#78A R. Burnstein (Ill. Inst. Tech.) Proposal to Study Multiparticle π^+ -p and p-p Interactions from 70 GeV/c and Above Utilizing the 30-Inch Bubble Chamber and Associated Equipment at NAL.

<u>Status</u>	2.B.	<u>NAL/ANL 30" Bubble Chamber (continued)</u>
Inactive See 138	#80A	T. Ferbel (Rochester)
		Proposal to Study Multiparticle-Production Processes Utilizing the 30-Inch Bubble Chamber General survey, 80K π^- pix at 70 and ≥ 250 GeV/c.
Rejected 8-26-71	#88	V. Hagopian (Florida State University)
		NAL Bubble Chamber Proposal Search for Fractionally Charged Particles. Quark search, 2×10^4 pictures, half with negative beam.
Approved 8-26-71	#121A	R. Lander (University of Calif., Davis)
		A Proposal To Search for Very Heavy Strange Particles Using a Small Hydrogen Bubble Chamber. π^+p , 50K pictures.
Approved 8-27-71	#125	D.R.O. Morrison (CERN)
		Proposal to Study π^-p Reactions at 60 and 200 GeV/c in the 30 Inch Hydrogen Bubble Chamber at NAL. π^-p , 50K pictures.
Withdrawn 4-10-72	#126	V. E. Barnes (Purdue)
		Multiparticle π^-p Interactions at 130 GeV/c and at the Highest Energy. Uses optical spectrometer of #2; 200K pictures with negative beam at each of 130 and 300 GeV/c.
Withdrawn See 154	#127	B. Eisenstein (Illinois)
		A Proposal to Study Slow Secondary Particle Distributions in π^-p and pp Reactions in the 30-Inch Bubble Chamber. General survey with bare chamber; total of 200K pictures divided among π^- and p at 50, 150 and 300 GeV/c.
Active 8-71	#128	A. Benvenuti (Wisconsin)
		Search for Mossbauer Type Nuclear Collisions with High Energy Protons. Heavy target in front of HBC hit by proton: 600K pictures.
Active 8-71	#129B	W. F. Fry (Wisconsin)
		An Investigation of the Components of the Neutral Beam Produced by High Energy Protons at NAL Using the 30" Bubble Chamber. Use HBC to look at 30-100 mr neutral production; 20K pictures initially.

<u>Status</u>	2.B.	<u>NAL/ANL 30" Bubble Chamber (continued)</u>
Rejected 8-26-71	#130	R. Panvini (Vanderbilt) Proposal to Study pp Interactions up to 500 GeV/c With the 30" Bubble Chamber. Bare chamber general survey; 100K pictures at each of 120 and 500 GeV, may attempt σ_{Tot} and $\frac{d\sigma}{dt}$ elastic.
Inactive	#131	D. H. Miller & D. Cords (Purdue) K^-p and $\bar{p}p$ Interactions at 200 GeV/c. Using optical spectrometer of #2 and incident beam tagging; 200K pictures.
Inactive See 154	#132	I. A. Pless (MIT, Brown, Illinois, IIT, Indiana, Johns Hopkins, Notre Dame, Rutgers, Stevens, Yale, NAL) A General Survey of Pion-Proton and Proton-Proton Collisions in the 100-500 GeV/c Region. General survey using hybrid system of 30" HBC and proportional chambers; 2,000,000 pictures.
Inactive	#133	W. D. Shephard (Notre Dame) Study of Multipion Production in High Energy π^-p Interactions at NAL Using the 30-Inch Hydrogen Bubble Chamber and a Wide-Gap Spark Chamber Spectrometer. Survey of π^-p interactions at 300 GeV/c using 30" HBC and downstream spectrometer of #2; 300K pictures.
Inactive	#134	V. P. Kenney (Notre Dame) Study of Multipion Production in High Energy π^-p Interactions at NAL. Bare chamber plus incident beam tagging which this group will provide; 100K pictures at 50 GeV/c, 200K at 150 and 100K at 300 GeV/c.
Withdrawn 3-27-72	#136	W. D. Walker (Duke, Toronto, Wisconsin) A Study of High Energy π^- Nucleon Collisions. π^+ and π^- on H_2 and π^+ on D_2 at 200 GeV/c using bare chamber for 20% and spectrometer of #2 for rest: 600K pictures total.
Approved 8-71	#137	F. R. Huson (NAL, LBL, Univ. of Calif.) Study of π^-+p Interactions At High Energy. π^-p , 50K pictures.

<u>Status</u>	2.B. <u>NAL/ANL 30" Bubble Chamber (continued)</u>
Approved 8-26-71	#138-I T. Ferbel (Rochester, Michigan) Study of Multiparticle Production in a 30" Bubble Chamber. 50K pix with highest energy protons available.
Approved 8-26-71	#138-II J. VanderVelde (Michigan, Rochester) Study of Multiparticle Production in a 30" Bubble Chamber. 50K pix with highest energy protons available.
Approved 8-26-71	#141-A T. H. Fields (ANL) Study of pp Interactions in the ANL 30-Inch Hydrogen Bubble Chamber at NAL. 50K pix with highest energy protons available.
Approved 8-26-71	#143 G. Kalbfleisch (BNL) Proposal For a Rapid Systematic Study of All Interactions in a π^-p Exposure of the Bare 30" Chamber at 120 GeV/c. 50K pix with ~ 200 BeV π^- .
Active	#145 J. K. Walker (NAL) A Proposal to Study Photon Proton Interactions Between 20 and 250 GeV. Photon-Proton interactions from 20-250 GeV in 30" bubble chamber.
Active	#153 T. Kitagaki (Tohoku University) Negative Pion - Proton Interactions at 200 GeV/c.
Approved 8-71	#154 I. A. Pless (MIT, Brown, Ill., Ind., Johns Hopkins, IIT, Rutgers-Stevens, Yale, NAL) Test of Proportional Wire Chambers in Hybrid Systems. Feasibility Study of Proportional Chamber Hybrid systems with 30-inch bubble chamber.
Active	#157 A. R. Dzierba (Caltech., LBL) A Proposal to Study High Energy Diffractive N* Production.

<u>Status</u>	2.B.	<u>NAL/ANL 30" Bubble Chamber (continued)</u>
Active	#158	R. Sosnowski (Inst. of Nuclear Research, Warsaw Univ.) Proposal to Study High Energy Collisions in the 30" Hydrogen Bubble Chamber.
Active	#159	P. K. Malhotra (Tata Institute) S. N. Ganguli Study of General Features of Particle Production in p-p Collisions at 400 and 100 GeV.
Active	#161	W. F. Fry (Univ. of Wisconsin) Proposal to Survey High Energy Proton Collisions in Neon and to Search for Anomalous Photon Bundles at NAL.
Active	#163	W. D. Walker (Duke, Univ. of North Carolina) Proposal for a Study of the Interaction of High Energy π^- with Neon
Active	#166	J. R. Ficenech (VPI) Study Multigamma and Charged Secondary Topologies Produced by 200 and 500 GeV/c Protons Incident on Neon.

Status

3. Neutrino Experiments

A. Using Counters

Approved
10-70

#1A D. Cline (Wisc., Penn., Harvard)

NAL Neutrino Proposal
Search for W to 10 GeV/c²; 4-fermion interactions; deep inelastic ν scattering; σ_{tot} for hydrogen.

Approved
10-70

#21 B. Barish (Cal Tech., NAL)

Neutrino Physics at Very High Energies.
Search for W to 15 GeV/c²; deep inelastic ν scattering; σ_{tot} vs energy to 300 GeV for several A.

Rejected
11-70

#38 J. Walker (NAL, ANL, MIT, Northwestern, Pittsburgh)

Production of W's and Study of Deep Inelastic Reactions by Very High Energy Neutrinos.

Status

3.B. Including the Fifteen-Foot Bubble Chamber

Defer 12-71	#9B M. Stevenson (LBL, Hawaii)
	Proposal to Study Neutrino Interactions in the 30-m ³ NAL Bubble Chamber with External Muon Identifier. σ_{tot} ; deep inelastic ν scattering with auxiliary γ, μ detectors; elastic form factors; W production.
Rejected 12-71	#20 M. Block (Northwestern)
	A Study of Elastic Neutrino Scattering Using a Deuterium Bubble Chamber.
Approved 12-71	#28 W. Fry (Wisconsin, CERN)
	Search for Heavy Leptons and Hard Penetrating Radiation in the Neutrino Beam, Study of Diffraction Scattering of Neutrinos; Study of Deep Inelastic ν Scattering in a Ne Bubble Chamber at NAL, and Test of the $\Delta S = \Delta Q$ Rule at High Momentum Transfer Using Inclusive Reactions.
Approved 12-71	#31A M. Derrick (ANL, Carnegie-Mellon)
	Proposal to Investigate $\bar{\nu}_{\mu}$ Interactions in Hydrogen at NAL.
Defer 12-71	#42 A. Garfinkel (Purdue)
	Neutrino Interactions in the Deuterium-Neon 14-Foot Double Bubble Chamber. Study s, t dependence of ν interactions at high energies in D ₂ .
Defer 12-71	#44A B. Roe (Michigan, NAL)
	Proposal to Study Neutrino Interactions with Protons and Neutrons Using the 14-Foot Bubble Chamber at NAL.
Approved 12-71	#45A F. Nezzrick (NAL, Michigan)
	Proposal to Study Neutrino Interactions with Protons Using the 14-Foot Bubble Chamber at NAL.
Approved 12-71	#53A C. Baltay (Columbia, BNL)
	Search for the Intermediate Boson, Lepton Pair Production, and a Study of Deeply Inelastic Reactions Utilizing High Energy Neutrino Interactions in Liquid Neon.

Status

3.B. Including the Fifteen-Foot Bubble Chamber (cont'd)

Rejected
12-71

#92A F. Sciulli (Cal Tech.)

A Neutrino Experiment in the NAL 30m³ Bubble Chamber Using "Monoenergetic" Neutrinos.

Active

#122A A. A. Volkov (Inst. High Energy Physics, Serpukhov)

On Investigation of Neutrino Interaction with the 15-foot Bubble Chamber at NAL.

Defer
12-71

#151A G. Snow (Maryland, Ill. Inst. Tech.)

A Study of Neutrino Interactions with Neutrons and Protons Using the 15-Foot Bubble Chamber at NAL Filled with Deuterium.

Approved
12-71

#155 M. L. Stevenson (LBL, Hawaii)

Proposal to Develop a Phase I External Muon Identifier (EMI) for use with the NAL 30m³ Bubble Chamber.

Status

4. Emulsion Experiments

Approved 8-70	#90	J. Gierula	(Cracow)
		Cracow Nuclear Emulsion Exposures.	
Withdrawn 7-14-71	#91	C-Y Chien	(Johns Hopkins, NAL)
		Proposal for an Emulsion Experiment to Measure the Energy Dependence of Total Cross Sections and Multiplicities up to 500 GeV/c.	
Approved 12-71	#94	E. Goza	(Louisiana State Univ.)
		100 GeV Pion Interactions in Photographic Emulsion. (A Parasitic Experiment)	
Approved 2-71	#103	D. King	(Univ. of Tenn.)
		Intra-Nuclear Cascade Produced by 200-GeV Protons.	
Approved 4-71	#105	P. Malhotra and S. Ganguli	(Tata Inst.)
		A Proposal to Study Some Characteristics of Proton-Nucleon and Proton-Nucleus Collisions at 400 GeV using Nuclear Emulsions.	
Approved 3-72	#114	P. L. Jain	(SUNY at Buffalo)
		Interaction of 200-500 GeV Proton with Emulsion Nuclei.	
Approved 4-71	#116	J. Hébert	(Ottawa, Barcelona, McGill, NAL, Toronto, Strasbourg)
		Interaction of High Energy Protons in Nuclear Emulsions Loaded with B ¹⁰ and LiF.	
Approved 4-71	#117A	O. Kusumoto	(Osaka City Univ., Hiroshima Univ., INS Tokyo Univ.)
		Phenomenological Study of 200 and 500 GeV/c Proton-Proton Collisions in Emulsion.	
Inactive	#124	H. H. Aly	(Southern Ill. Univ.)
		The Nature of the Momentum Spectrum of the Secondary Particles from High-Energy Collision.	
Approved 9-71	#156	K. Niu	(Univ. of Tokyo)
		Study of Secondary Particles Produced by 200 and 500 GeV Protons in Emulsion Chambers.	

Status

4. Emulsion Experiments (continued)

Active

#171 J. J. Lord (Univ. of Washington)

Proposed Emulsion Experiment Search for
Short Lived Particles at High Energies.

Status

5. K^0 's, etc.

Rejected
8-70

#15 J. Steinberger (CERN, Columbia, Univ. of Calif.
Santa Cruz, Univ. of Chicago)

Proposal for a Measurement of the Momentum
Dependence of the Difference in Forward
Scattering Amplitudes of K and \bar{K} .

Rejected
8-70

#30 T. Kirk (Harvard, NAL)

Neutral Kaon Regeneration in Liquid Hydrogen
From 40 GeV to 200 GeV.

Rejected
8-70

#60 A. Wattenberg (Univ. of Ill.)

Very High Energy K_L^0 Experiments at NAL.

Rejected
8-70

#79 H. Ticho (UCLA)

A Measurement of the Regeneration Parameter in
the 100 GeV/c Range.

Approved
8-70

#82 V. Telegdi (Univ. of Chicago, SLAC,
Univ. of Calif. San Diego, NAL)

Proposal to Investigate Regeneration of Neutral
K-Mesons at Very High Energies.

Active

#160 U. Nauenberg (Univ. of Colorado)

Proposal to Search for the Decay Mode $K_S \rightarrow \mu^+ \mu^-$.

Active

#162 L. G. Pondrom (Univ. of Wisconsin)

Note on $K_S \rightarrow \mu^+ \mu^-$ Search in the Neutral Hyperon
Beam.

Status

6. Monopole Search

Approved
8-70

#3 P. Eberhard (LBL, SLAC)

Proposal for a Search for Magnetic Monopoles at NAL.
Separation from beam dump target after removal.

Approved
2-71

#19A D. Tompkins (Univ. of Wyoming)

A Search for Monopole Production by 200-500 GeV
Protons.

Approved
8-70

#22 G. Collins (VPI, BNL)

Experimental Proposal to the NAL for a Search for
Multigamma Events from Magnetic Monopole Pairs.
Search for multi-gamma events from monopole
pairs.

Approved
8-70

#74 R. Fleischer (GE, NAL)

Proposal to National Accelerator Laboratory for a
Search for Magnetic Monopoles.
Parasitic search using special (plastic?)
detectors.

Approved
8-70

#76 R. Carrigan (NAL)

Search for Magnetic Monopoles Produced at NAL.
Counters and magnets used to search for free,
bound monopoles.

Status

7. Electron/Photon Experiments

Active	#24A	D. Caldwell	(Univ. of Calif., Santa Barbara, NAL)
		Measurement of Inelastic Compton Scattering.	
Approved 8-71	#25A	D. Caldwell	(Univ. of Calif., Santa Barbara)
		Measurement of the Total Photoabsorption Cross Section on H, D, C, Cu, and Pb for Photon Energies from 14 to 300 GeV, and a Search for the Photoproduced Monopole.	
Defer 8-71	#49	J. Poirier	(Notre Dame, NAL)
		The Electromagnetic Form Factor of the Charged Pion From π^+e Elastic Scattering.	
Defer 8-71	#71A	D. Drickey	(UCLA, JINR, Dubna)
		A Measurement of the Pion Form Factor.	
Approved 8-71	#87A	W. Lee	(Columbia, Harvard, Hawaii, Cornell, Illinois)
		Proposal to Search for Heavy Leptons and Intermediate Bosons from Photon-Nucleon and Photon-Nuclei Collisions.	
Defer 8-71	#101	B. Gittelman	(Cornell, ANL)
		Elastic π^+e^- Scattering.	
Defer 8-71	#139	E. Engels	(Pittsburgh)
		A Measurement of the Electromagnetic Radius of the Kaon and the Difference Between the Pion and Kaon Radii.	
Active	#144	S. Ting	(MIT, McGill, Carleton, Minnesota)
		Proposal to Set Up a Tagged Photon Facility and to Survey Induced Reactions in 50-300 BeV Region.	
Active	#152	C. Heusch	(Univ. of Calif., Santa Cruz)
		Proposal to Build an Electron-Photon Facility at NAL, and to Measure Photon Scattering at High Energies.	
Active	#164-II	Z.G.T. Guiragossian	(Stanford, Rice, Univ. of Houston)
		Deep Inelastic Electron Scattering with a Search for Massive Leptons and Quarks, on Hydrogen, Deuterium, Cu and Pb Targets.	

Status

8. Muon Experiments

Withdrawn
10-70

#5 M. Perl (SLAC)
Muon-Proton Inelastic Scattering.

Approved
8-70

#26 L. Hand (Cornell, Mich. State, UCSD)
High Momentum Transfer Inelastic Muon Scattering
and Test of Scale Invariance at NAL.

Inactive
see 98

#29 R. Wilson (Harvard)
Proposal for μ P Scattering Experiment at NAL.

Inactive
see 98

#33 L. Mo (Univ. of Chicago, Penn.,
NAL)
Preliminary Proposal to Measure the Hadrons in
Muon-Proton Inelastic Scattering at the National
Accelerator Laboratory.

Approved
1-71

#98 L. Mo (Univ. of Chicago,
Harvard, NAL)
Muon-Proton Inelastic Scattering Experiment at
the National Accelerator Laboratory.

Status

9. Miscellaneous

Approved 8-70	#81	G. Butler	(ANL, BNL, Univ. of Chicago, Carnegie-Mellon, Purdue, St. Univ. of New York, Buffalo)
			Preliminary Survey of 200 GeV Proton Interactions with Complex Nuclei.
Approved 3-71	#108	M. Awschalom	(NAL)
			A Beam Dump Experiment.
Defer 8-71	#119	C. J. Batty	(RHEL, Manchester, Hebrew Univ., ANL)
			Production of Heavy and Super-Heavy Nuclei in Targets Irradiated by Very High Energy Protons.
Defer 8-71	#142	R. W. Stoughton	(ORNL)
			Proposal for a Search for Superheavy Elements by Irradiations at NAL.
Defer 8-71	#146	J. Hébert	(Ottawa, Strasbourg, Frankfurt, Barcelona, Mississippi State, Montreal)
			A Study of Proton-Nuclei Interactions at Energies Higher Than 100 GeV with Visual Solid Detectors.
Defer 8-71	#147	J. Hébert	(Ottawa, Strasbourg)
			Proposal of an Experiment on the Fission of Very Heavy Nuclei Induced by 200-GeV Protons.
Active	#167	D. F. Bartlett	(Colorado, NAL)
			"Static" Electric and Magnetic Fields Near the Internal Proton Beam at NAL.
Active	#169	P. S. Young	(Mississippi State, Laboratoire de Physique Nucleaire, Instituto de Fisica Corpuscular)
			Proposal for (p,p) and (p,N) Collision Experiments at Batavia by use of Nuclear Emulsion and Electronic Detectors.

10. Cross Reference Index

<u>Proposal #</u>	<u>Category</u>	<u>Spokesman</u>	<u>Status</u>
1	3-A	D. Cline	Approved
2	2-B	G. A. Smith	Approved
3	6	P. H. Eberhard	Approved
4	1-H	M. J. Longo	Approved
5	8	M. Perl	Withdrawn
6	1-C	A. D. Krisch	Approved
7	1-C	D. Meyer	Approved
8	1-F	L. G. Pondrom	Approved
9	3-B	M. L. Stevenson	Defer
10	1-B	W. F. Baker	Inactive
11	1-A	Y. S. Kim	Rejected
12	1-H	N. W. Reay	Approved
13	1-G	T. Bowen	Inactive
14	1-D	P. Franzini	Approved
15	5	J. Steinberger	Rejected
16	1-C	L. T. Kerth	Rejected
17	2-A	B. G. Reynolds	Active
18	1-D	G. K. O'Neill	Defer
19	6	D. R. Tompkins	Approved
20	3-B	M. M. Block	Rejected
21	3-A	B. Barish	Approved
22	6	G. B. Collins	Approved
23	1-D	J. E. Rothberg	Approved
24	7	D. O. Caldwell	Active
25	7	D. O. Caldwell	Approved
26	8	L. Hand-K. W. Chen	Approved
27	1-H	J. Rosen	Approved
28	3-B	W. Fry	Approved
29	8	R. Wilson	Inactive
30	5	T. B. W. Kirk	Rejected
31	3-B	M. Derrick	Approved
32	1-G	R. Hofstadter	Approved
33	8	L. W. Mo	Inactive
34	1-G	R. W. Huggett	Approved
35	1-E	D. McLeod	Inactive
36	1-C	R. L. Cool	Approved
37	2-A	E. Malamud	Active
37-A	2-B	E. Malamud	Approved
38	3-A	J. Walker	Rejected
39	2-B	W. D. Walker	Withdrawn
40	2-A	R. B. Willman	Active
41	2-A	V. Barnes	Active
42	3-B	A. Garfinkel	Defer
43	1-E	D. H. Miller	Inactive
44	3-B	B. Roe	Defer
45	3-B	F. Nezirick	Approved
46	2-A	F. R. Huson	Active
47	2-B	I. Pless	Withdrawn
48	1-A	R. K. Adair	Approved
49	7	J. A. Poirier	Defer
50	1-C	J. Orear	Defer

<u>Proposal #</u>	<u>Category</u>	<u>Spokesman</u>	<u>Status</u>
51	1-E	E. von Goeler	Approved
52	1-E	H. Weisberg	Defer
53	3-B	C. Baltay	Approved
54	1-E	J. Pine	Inactive
55	1-D	A. V. Tollestrup	Inactive
56	1-B	R. L. Cool	Inactive
57	1-B	S. J. Lindenbaum	Rejected
58	2-A	R. S. Panvini	Active
59	1-E	L. Holloway	Defer
60	5	A. Wattenberg	Rejected
61	1-C	O. Chamberlain	Approved
62	2-B	J. VanderVelde	Inactive
63	1-A	J. Walker	Approved
64	1-D	A. L. Read	Inactive
65	2-A	K-W Lai	Active
66	2-B	J. VanderVelde	Inactive
67	1-D	B. Maglic	Approved
68	1-D	H. L. Anderson	Inactive
69	1-C	W. J. Willis	Approved
70	1-A	L. M. Lederman	Approved
71	7	D. Drickey	Defer
72	1-A	L. Leipuner	Approved
73	1-C	R. L. Anderson	Inactive
74	6	R. L. Fleischer	Approved
75	1-A	T. Yamanouchi	Approved
76	6	R. A. Carrigan	Approved
77	2-A	L. M. Libby	Inactive
78	2-B	R. A. Burnstein	Inactive
79	5	H. K. Ticho	Rejected
80	2-B	T. Ferbel	Inactive
81	9	G. W. Butler	Approved
82	5	V. Telegdi	Approved
83	2-A	T. Kitagaki	Active
84	1-D	T. Jenkins	Inactive
85	2-A	L. J. Gutay	Active
86	1-E	H. J. Lubatti	Approved
87	7	W. Lee	Approved
88	2-B	V. Hagopian	Rejected
89	2-A	W. B. Fretter	Active
90	4	J. Gierula	Approved
91	4	C-Y. Chien	Withdrawn
92	3-B	F. Sciulli	Rejected
93	1-D	M. Wahlig	Inactive
94	4	E. R. Goza	Approved
95	1-A	B. Cox	Approved
96	1-D	D. Ritson	Approved
97	1-F	J. Lach	Approved
98	8	L. W. Mo	Approved
99	1-D	R. Diebold	Active
100	1-A	J. Cronin-P. Piroué	Approved
101	7	B. Gittelman	Defer
102	1-D	T. Jenkins	Inactive
103	4	D. T. King	Approved
104	1-B	T. Kycia	Approved
105	4	P. Malhotra & S. Ganguli	Approved

<u>Proposal #</u>	<u>Category</u>	<u>Spokesman</u>	<u>Status</u>
106	1-E	D. Miller	Rejected
107	1-C	K-W. Lai	Rejected
108	9	M. Awschalom	Approved
109		K. P. Pretzl	Withdrawn
110	1-E	J. Pine	Approved
111	1-D	A. Tollestrup	Approved
112	1-H	M. N. Kreisler	Rejected
113	1-D	D. H. Miller	Inactive
114	4	P. L. Jain	Approved
115	1-A	M. L. Stevenson	Approved
116	4	J. Hebert	Approved
117	4	O. Kusumoto	Approved
118	1-E	J. Friedman	Active
119	9	C. J. Batty	Defer
120	1-A	D. Cline	Approved
121	2-B	R. L. Lander	Approved
122	3-B	A. A. Volkov	Active
123	1-A	Y. S. Kim	Defer
124	4	H. H. Aly	Inactive
125	2-B	D. R. O. Morrison	Approved
126	2-B	V. E. Barnes	Withdrawn
127	2-B	B. Eisenstein	Withdrawn
128	2-B	A. Benvenutti	Active
129	2-B	W. F. Fry	Active
130	2-B	R. Panvini	Rejected
131	2-B	D. H. Miller & D. Cords	Inactive
132	2-B	I. A. Pless	Inactive
133	2-B	W. D. Shephard	Inactive
134	2-B	V. P. Kenney	Inactive
135	1-D	T. L. Jenkins	Defer
136	2-B	W. D. Walker	Withdrawn
137	2-B	F. R. Huson	Approved
138	2-B	T. Ferbel/J. VanderVelde	Approved
139	7	E. Engels	Defer
140	1-D	D. Garelick	Rejected
141	2-B	T. H. Fields	Approved
142	9	R. Stoughton	Defer
143	2-B	G. Kalbfleisch	Approved
144	7	S. Ting	Active
145	2-B	J. K. Walker	Active
146	9	J. Hebert	Defer
147	9	J. Hebert	Defer
148	1-D	K. Ruddick	Defer
149	1-F	R. Winston	Defer
150	1-E	J. K. Walker	Active
151	3-B	G. Snow	Defer
152	7	C. Heusch	Active
153	2-B	T. Kitagaki	Active
154	2-B	I. A. Pless	Approved
155	3-B	M. L. Stevenson	Approved
156	4	K. Niu	Approved
157	2-B	A. R. Dzierba	Active
158	2-B	R. Sosnowski	Active
159	2-B	P. K. Malhotra & S. Ganguli	Active
160	5	U. Nauenberg	Active

<u>Proposal #</u>	<u>Category</u>	<u>Spokesman</u>	<u>Status</u>
161	2-B	W. F. Fry	Active
162	5	L. G. Pondrom	Active
163	2-B	W. D. Walker	Active
164-I	1-E	Z. G. T. Guiragossian	Active
164-II	7	Z. G. T. Guiragossian	Active
165	1-C	D. Ritson	Active
166	2-B	J. Ficenec	Active
167	9	D. F. Bartlett	Active
168	1-F	T. J. Devlin	Active
169	9	P. S. Young	Active
170	1-A	J. E. Pilcher	Active
171	4	J. J. Lord	Active